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[54] CELLULAR COMMUNICATIONS SYSTEM  
WITH SECTORIZATION3 26031 of 0000 Japan .  
58-164007 6/1983 Japan .[75] Inventors: Larry G. Fischer, Waseca, Minn.;  
Charles R. Ratliff, Crystal Lake, Ill.;  
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5,627,879, which is a continuation-in-part of Ser. No. 183,  
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which is a continuation-in-part of Ser. No. 946,548, Sep. 17,  
1992, abandoned.[51] Int. Cl.<sup>6</sup> ..... H04Q 7/30

[52] U.S. Cl. .... 379/56.2; 455/562; 359/152

[58] Field of Search ..... 379/58, 59, 60,  
379/56.1, 56.2; 455/33.1, 33.2, 33.3, 33.4,  
54.1, 56.1, 56.1, 56.2; 359/152, 164

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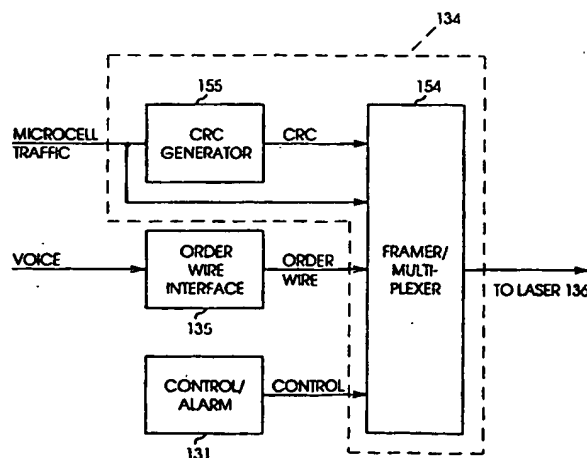
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## [57] ABSTRACT

A method and apparatus for sectorizing coverage of a cellular communications area includes providing a remote unit having microcell antenna units. Each microcell antenna unit is configured to cover a particular sector. The remote unit is connected to a sectorized base station unit which is connected to a mobile telecommunications switching office. Separate digitized streams representative of telephone signals received from the mobile telecommunications switching office are generated corresponding to the microcell antenna units and the separate digitized streams are multiplexed and transmitted to the remote unit. The remote unit demultiplexes the multiplexed digitized streams into the separate digitized streams corresponding to the microcell antenna units and the separate digitized streams are converted to RF signals for coverage of a particular sector by the corresponding microcell antenna unit. Separate digitized streams are separately generated for each microcell antenna unit representative of RF signals received at the microcell antenna unit for a particular sector. The separately generated digitized streams are multiplexed at the remote unit and transmitted to the sectorized base station unit. At the sectorized base station unit, the multiplexed digitized streams are demultiplexed into the separate digitized streams corresponding to microcell antenna units and the separate digitized streams are converted to RF signals for provision to the mobile telecommunications switching office. Diversity at the remote units is also provided.

9 Claims, 58 Drawing Sheets



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